Attorney Docket No.: LUKP:115US Appl. No. 10/711,225 Amdt. dated June 22, 2005 Reply to Office Action of February 23, 2005

Amendments to the Specification:

Please replace paragraph [0018] with the following amended paragraph:

[0018] According to one embodiment of the invention, the clutch characteristic advantageously can also be adapted via a sensing point adaptation. In so doing, the position of the clutch actuating mechanism at which the clutch begins to transmit a minimal torque is determined. This adaptation can be carried out with a gear engaged and the engine idling while the vehicle is stationary, that is, if the foot or hand brake is engaged. The clutch is slowly engaged until a minimal torque is transmitted. The idle speed stabilizer of the engine controller reacts to the engagement of the clutch with an increase in the engine torque by exactly the amount of the transmitted clutch torque (3-4 nm) (3-4 N-m), so that the idle speed remains constant. Using the reaction of the engine torque, the transmitted torque of the clutch and with it the sensing point may be determined and adapted.

Please replace paragraph [0020] with the following amended paragraph:

[0020] In the following, the invention and its embodiments are explained in detail in connection to the figures. In the drawing:

Figure 1 shows a block diagram of a twin-clutch transmission in diagrammatic illustration; and,

Figure 2 shows a flow diagram for the sensing point adaptation when a vehicle is stationary:[[.]]

Figure 3 shows a flow diagram for the zero point correction when a vehicle is moving; and,

Figure 4 shows a flow diagram for the zero point correction when a vehicle is stationary.

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Please replace paragraph [0023] with the following amended paragraph:

The clutch characteristic can also be adapted via the sensing point adaptation. In this process, the position of the clutch actuator is determined at which the clutch begins to transmit a minimal torque. This adaptation can be carried out when the vehicle is stationary, that is, when the foot or handbrake is engaged, a gear is engaged and the engine is idling. The clutch is slowly engaged until the minimal torque is transmitted. The idle speed stabilizer of the engine controller reacts to the engagement of the clutch with an increase of the engine torque by exactly the amount of the transmitted clutch torque (3-4 nm) (3-4 N-m) so that the idle speed remains constant. Using the reaction of the engine torque, the transmitted torque of the clutch, and with it the position of the sensing point, may be determined and adapted. These strategies are redefined for the use of electromechanically controlled clutch actuators of the clutch actuating mechanism in twin-clutch systems or parallel shift transmissions.

Please replace paragraph [0024] with the following amended paragraph:

First, the function and the structure of a twin-clutch transmission or a parallel-shift transmission PSG are explained in detail in Figure 1. Internal combustion engine M transmits a torque T to input shaft E of parallel-shift transmission PSG and thus to a first input shaft E1, which is connected to a first clutch A, and a second input shaft E2, which is connected to a second clutch B. Clutch A is connected to a partial transmission iA, which typically shifts odd gears 1, 3 and 5. Clutch B is connected to partial transmission iB, which shifts the even gears 2, 4 and in some cases reverse. Output shaft [[A1]] O1 of partial transmission iA and output shaft [[A2]] O2 of partial transmission iB are jointly connected via output shaft [[A]] O of parallel shift transmission PSG to vehicle wheels F.

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Please replace paragraph [0025] with the following amended paragraph:

[0025]In the driving state, a clutch A or B is closed and transmits the engine torque via an engaged gear of partial transmission iA or iB mounted downstream thereof to output shaft [[A]] O. The other inactive clutch B or A is then either disengaged when the gear of the partial transmission mounted downstream thereof is engaged or engaged when the gear of the partial transmission mounted downstream thereof is disengaged.

Please replace paragraph [0028] with the following amended paragraph:

[0028]When Referring to Figure 3, when the vehicle is traveling, if active clutch A or B transmits an engine torque, the zero correction occurs as follows:

- 1. When [[the]] a gear (gear N) in partial transmission iB or iA, which is mounted downstream of inactive clutch B or A, is disengaged, zero correction is carried out on clutches A and B.
- 2. When the gear in partial transmission iB or iA, which is mounted downstream of inactive clutch B or A, is engaged, the gear of the partial transmission mounted downstream of inactive clutch A or B is disengaged. Thereafter, the zero correction of clutches A and B and the re-engagement of the same gear of partial transmission iB or iA, which is mounted downstream of inactive clutch B or A, takes place.

Please replace paragraph [0029] with the following amended paragraph:

[0029] [[If]] Referring to Figure 4, if the vehicle is stationary, according to the present invention it is possible to proceed as follows:

When [[the]] gears (gear N) in partial transmissions iB and iA, which are mounted downstream of clutches B and A, are disengaged, the zero correction of clutches A and B is carried out.

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2. When the gear in partial transmission iA or iB, which is mounted downstream of clutch A or B, is disengaged and the gear in partial transmission iB or iA, which is mounted downstream of clutch B or A, is engaged, the zero correction of clutch A or B is carried out, the gear of partial transmission iB or iA, which is mounted downstream of clutch B or A, is disengaged, the zero correction of clutch B or A is carried out, and, finally, the gear of partial transmission iB or iA, which is mounted downstream of clutch B or A, is re-engaged.

- 3. When the gear of partial transmission iA or iB, which is mounted downstream of clutch A or B, is disengaged and the gear in partial transmission iB or iA, which is mounted downstream of clutch B or A, is engaged, the disengagement of the gear of partial transmission iB or iA occurs. The zero correction of clutches A and B is carried out and thereafter the same gear of partial transmission iB or iA is re-engaged.
- 4. When the gears in partial transmission iA or iB, which are mounted downstream of clutch A and B, are disengaged, the disengagement of the gear of partial transmission iA or iB, which is mounted downstream of clutch A or B, occurs. Thereafter, the zero correction of clutch A or B is carried out and the same gear of partial transmission iA or iB is re-engaged. The gear of partial transmission iB or iA, which is mounted downstream of clutch B or A, is disengaged, whereupon the zero correction of clutch B or A is carried out and the same gear of partial transmission iB or iA is re-engaged.
- 5. When the gears in partial transmission iA and iB, which are mounted downstream of clutch A and B, are disengaged, the disengagement of the gears in both partial transmissions iA and iB, which are mounted downstream of clutches A and B, occurs. The zero correction of clutches A and B is carried out, and the same gears of partial transmission iA and iB are reengaged.

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Please add the following <u>new</u> paragraph after paragraph [0033]:

[0033.1]Sensing point adaptation methods 1 through 4 are best understood in view of Figure 2. All four methods apply to a stationary vehicle having at least one engaged gear in a partial transmission, thus the methods may be performed when both partial transmissions have an engaged gear. The method begins with a determination of whether one or both partial transmissions have an engaged gear. If only one partial transmission includes an engaged gear, the disengaged gear of the other partial transmission is engaged. If both partial transmissions have engaged gears, no change to the gears is required and the methods proceed to the next stage. Subsequent to ensuring that both partial transmissions have an engaged gear, the sensing point adaptation may either be simultaneous or consecutive. When simultaneously adapting, no further determination is required, and both clutches are adapted. Alternatively, if consecutive adaptation is selected, the method of determining the first clutch to adapt is either pursuant to the last successful adaptation or the starting off gear methods. According to the last successful adaptation method, the order of sensing point adaptation is based on which clutch was most recently or most remotely adapted. Thus, if clutch A was the last successfully adapted clutch, then the sensing point adaptation is first performed on clutch B, and subsequently on clutch A. While contrarily, if clutch B was the last successfully adapted clutch, then the sensing point adaptation is first performed on clutch A, and subsequently on clutch B. Alternatively, the starting off gear method includes determining the first clutch to adapt based on which clutch is used for starting off the vehicle from its stationary condition. Thus, if clutch A is the clutch used for starting off, then the sensing point adaptation is first performed on clutch A, and subsequently on clutch B. While contrarily, if clutch B is the clutch used for starting off, then the sensing point adaptation is first performed on clutch B, and subsequently on clutch A. Following either consecutive sensing point adaptation method, a determination is made as to whether or not the adaptations were successfully carried out. If the adaptation is not successful, the portions of the methods after gear engagement are repeated, while if the adaptation is successful, the methods are complete.